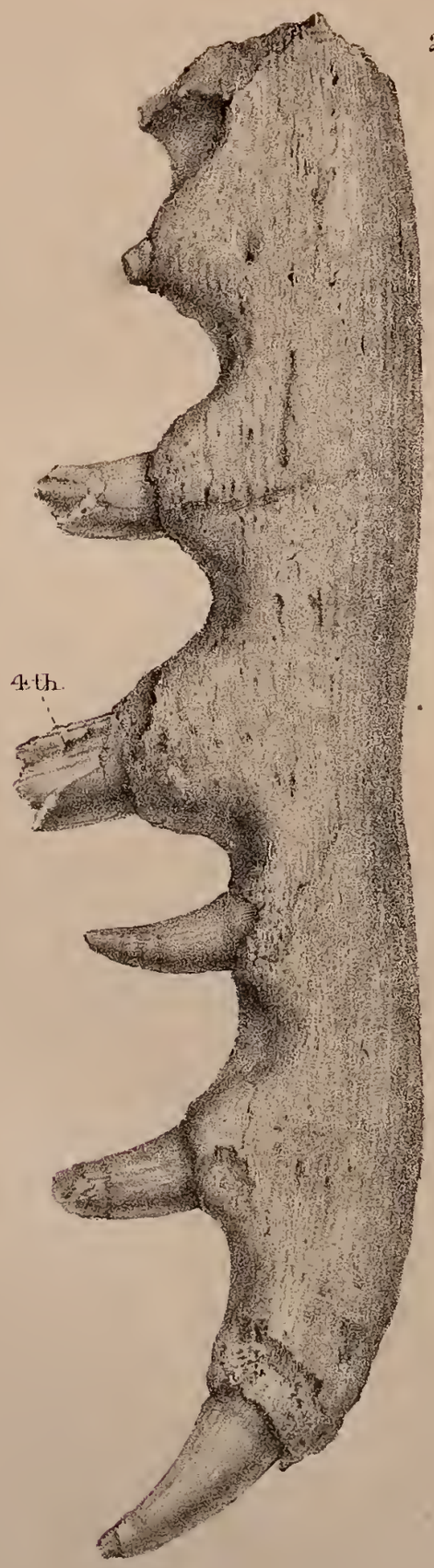

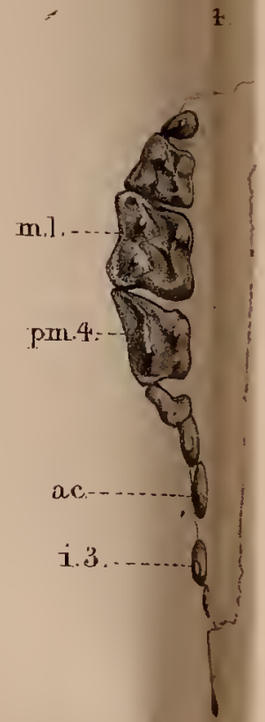

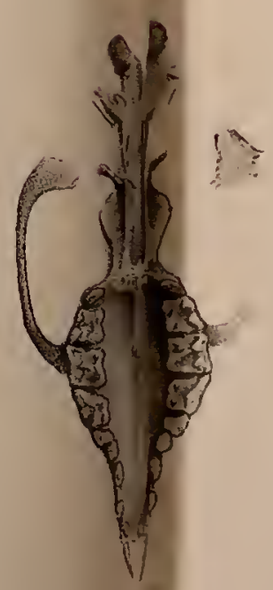

Perjeau & Highley del et lith.

Mintern Bros. imp.

TOMISTOMA CHAMPSOIDES & ERINACEUS ŒNINGENSIS.

4. Description *of the* Cranium *of a new Species of* Erinaceus *from the* Upper Miocene *of* Œningen. By R. Lydekker, Esq., B.A., F.G.S., &c. (Read November 18, 1885.)

[Plate II.]

Among the collection of fossil remains purchased in 1871 by the British Museum from the executors of the late Professor van Breda, of Haarlem, was a small slab of limestone from the Upper Miocene of Œningen, Switzerland, containing the ventral half of a small mammalian cranium, of which only the dorsal aspect was exposed. At the time of writing part i. of the 'Catalogue of Fossil Mammalia in the British Museum' (1885), I was unable to come to any conclusion as to the affinity of the specimen in its then condition, and it was therefore not entered. Shortly afterwards, however, Mr. W. Davies, F.G.S., of the British Museum, thought that the specimen might be "developed;" and by careful chiselling under his direction the palatal surface was cleared, and revealed the whole of the dentition of a species of *Erinaceus* in a most perfect state of preservation.

Before discussing the affinities of the fossil form, it may be as well to give a brief notice of the extent and distribution of the genus. The dental formula is I. $\frac{3}{2}$, C. $\frac{1}{1}$, Pm. $\frac{3}{2}$, M. $\frac{3}{3}$; and as Dr. Dobson* considers that the three upper premolars are respectively homologous with the last three teeth of the typical series of four, they will be termed pm. 2, pm. 3, pm. 4†.

At the present day nineteen species are recognized by Dr. Dobson‡, which are distributed throughout Europe, Africa, and the greater part of Asia. Of these, *Erinaceus europæus* (which is considerably larger than the majority of the other species) is an aberrant form, differing from all the others in that the third upper incisor and the second upper premolar have each but a single (instead of a double) root, and exhibit marked peculiarities in the form of their crowns; in some instances the two roots of the upper canine have coalesced § in this species. Two of the Indian species (*E. micropus* and *E. pictus*) are further distinguished by the minute size, simple structure, position, and caducous character of the upper pm. 3; while the former is, again, differentiated by the absence of the jugal element of the zygomatic arch ‖. The African *E. albiventris*, on account of the absence of the hallux, has been referred by some zoologists (in my own opinion unnecessarily) to a separate genus.

Turning to fossil forms, five species are recorded by Gervais in the

* Proc. Zool. Soc. 1881, p. 403.

† By many writers these three teeth are termed first, second, and third premolars.

‡ Encyclopædia Britannica, 9th ed. vol. xv. p. 402 (1883).

§ Vide Dobson, Proc. Zool. Soc. 1881, p. 403, fig. 10.

‖ The Indian species are described by Anderson in the Journ. As. Soc. Beng. vol. xlvii. pt. 2, pp. 95–211, pls. iii., iv., v., v.A (1878).

'Zoologie et Paléontologie Françaises,' 2nd ed. p. 53, and I am unacquainted with any others. The first of these five is *E. major*, Pomel, from the Upper Pliocene of Puy-de-Dôme, which is said to be somewhat larger than *E. europæus*, and to have thicker molars and stouter limb-bones; in the absence of a figure it is, however, almost impossible to say whether this form is really entitled to specific distinction, and it can, therefore, only be regarded as a nominal species. *E. arvernensis* *, from the Lower Miocene of Auvergne, is known only by the mandible, and is a small species, apparently agreeing very closely with some of the Asiatic forms. The third species, *E. sansaniensis*, Lartet †, from the Middle Miocene of Sansan, is also of small size, and is known by teeth, fragments of the mandible, and limb-bones; but it can hardly be considered more than a nominal species. The fourth species, *E. dubius*, Lartet ‡, from the same formation, is founded on a fragment of a mandible with three teeth, which, judging from the description, most probably belongs to the genus *Plesiosorex* §. The fifth species, *E. nanus*, Aymard, from the Lower Miocene of Ronzon, is a very small form, which was subsequently made the type of a new genus *Tetracus* ‖. Finally, Lartet ¶ mentions fragments from the Middle Miocene of Sansan, which indicate a species equal in size to *E. europæus*.

Reverting now to the fossil, it may be observed that it indicates a species nearly equal in size to *E. europæus*, the length of the cranium from the foramen magnum being 0·048 m. in the former, and 0·052 m. in a full-sized example of the latter; the second incisor bears nearly the same proportion to the third as obtains in *E. europæus*, but the first incisor is relatively smaller than in that species; there is a diastema between the third incisor and the canine, and each of these teeth appears to be inserted by two roots. The second premolar has two roots **, and there is no diastema between it and pm. 3, the latter tooth being large and complex; the second true molar is relatively smaller in comparison with m. 1 than in *E. europæus*. The zygomatic arch is complete, but the state of preservation of the hinder part of the palate does not admit of close comparison with recent skulls.

The presence of two roots to pm. 2, and probably to i. 3, distinguishes the specimen from *E. europæus*; and a comparison with the fine series of skulls in the British Museum has shown that it cannot apparently be referred to any other existing species. It comes, on the whole, nearer to the North African *E. algirus* than to any other species, but differs by the relatively smaller m. 2 and m. 3, and the relative proportions of the incisors.

Of the named fossil species, the only one which could possibly be

* See Cat. Foss. Mamm. Brit. Mus. pt. i. pp. 17, 18 (1885).
† Notice sur la Colline de Sansan, p. 12 (1851).
‡ *Loc. cit.*
§ See Cat. Foss. Mamm. Brit. Mus. pt. i. p. 19 (1885).
‖ See Filhol, Ann. Sci. Géol. vol. xii. art. 3, pp. 8–14 (1881, vol. dated 1882). The question is discussed whether this genus may not be identical with one of those described by Pomel.
¶ *Op. cit.* p. 13.
** In examining this tooth the crown broke off and revealed the two fangs.

identical with the present form would be *E. major*; but, as already mentioned, it is impossible to consider that species as more than a nominal one; it is, however, quite probable that the unnamed large species from Sansan may be identical.

As the Œningen specimen cannot, therefore, be identified with any named form, it may be regarded as a new species, for which the name *Erinaceus œningensis* is proposed. This species may be defined as agreeing nearly in size and the number of roots to the upper teeth with *E. algirus*, but distinguished by the proportionate size of the incisors and true molars. It is somewhat difficult to determine whether the characteristic features of the dentition of *E. europæus* indicate a higher or lower degree of specialization than that obtaining in the other existing species; but since the Œningen species agrees in this respect with the latter group, and that group comprehends such a large number of forms, it is not improbable that the dentition of *E. europæus* is the most specialized. Considering, then, that the peculiar features of the dentition of *E. europæus* may be of comparatively recent origin, and taking into account the close general resemblance in size and structure existing between *E. œningensis* and the larger Palæarctic forms like *E. europæus* and *E. algirus*, it is not improbable that the former may be the parent stock from which one, or perhaps both, of these species were derived. The small dimensions of the Lower and Middle Miocene *E. arvernensis* and *E. sansaniensis* may, perhaps, also indicate that the parent stock of some of the smaller existing Asiatic species likewise originated in the Tertiaries of Europe.

EXPLANATION OF PLATE II. Figs. 3, 4.

Erinaceus œningensis, Lydekker. Cranium from the Upper Miocene of Œningen: fig. 3, palatal aspect, natural size; fig. 4, right upper dentition, × 2. British Museum (no. 42824).

Discussion.

Mr. E. T. Newton remarked on the small differences between the lesser fossil animals of the later Tertiaries, more especially the Pliocene, and those of the present day; and while not doubting the validity of Mr. Lydekker's new species of Hedgehog, called attention to the tendency there had been, at a time when it was thought that no fossil species could be the same as a recent one, to give new names; but when recent forms were traced back in time, it was found that they extended much further than was anticipated, and some of the fossil species turned out to be identical with the recent.

Dr. Woodward said that this specimen, with many others, was obtained by Dr. Oswald Heer, when a student. The specimens were purchased by Dr. van Breda, and the money was used by Heer to pay his college fees.

Mr. Lydekker, in reply, agreed with Mr. Newton's remarks, and said that in this case he had insisted on affinities rather than differences from existing species. Still the distinctions were marked. All fossil hedgehogs came very near recent forms, and this one was closely allied to Palæarctic species.